

## **JULY 2009 WEATHER SUMMARY FOR THE CENTRAL CALIFORNIA INTERIOR**

*By Gary Sanger and Brian Ochs*

July began with an upper-level ridge centered over the Four-Corners area, bringing triple-digit temperatures to the central and southern San Joaquin Valley. Above normal temperatures continued through Independence Day, then the ridge was pushed east by a trough moving into the Pacific Northwest. The trough then stalled along the California coast for the next several days, deepening the marine layer and increasing the surface-pressure gradient over the San Joaquin Valley. Marine air pushed through the Sacramento River Delta, causing temperatures to fall to near to slightly below normal beginning July 5<sup>th</sup> and continuing through the 13<sup>th</sup>.

The flow aloft over interior central California during the first part of July was mostly dry. As a result, there were only a few clouds near the Southern Sierra Nevada crest each afternoon, but no thunderstorms. This was not true for the central San Joaquin Valley, however. Thunderstorms developed along a weak frontal boundary over the southern San Francisco Bay area during the afternoon of July 11<sup>th</sup>. Early that evening, convection associated with this boundary pushed as far south as Merced County, bringing a few sprinkles to the Merced Municipal Airport, but no measurable rain.

By July 12<sup>th</sup>, the upper-level ridge was again building westward. The ridge built into California beginning on July 13<sup>th</sup>, and strengthened over the next several days. Temperatures quickly warmed to well above normal, with widespread triple-digit high temperatures on the 14<sup>th</sup>. This warming continued over the next several days, with Fresno reaching a high of 112 degrees on July 19<sup>th</sup>, and Bakersfield only a degree cooler. Both high temperatures set records for that date.

An upper-level disturbance off the west coast of Baja California spun a fetch of subtropical moisture into California beginning July 16<sup>th</sup>, with isolated thunderstorms developing along the Southern Sierra Nevada crest. By the 18<sup>th</sup>, there was enough moisture that thunderstorms also formed in the Kern County deserts, with one afternoon thunderstorm near Edwards AFB reaching severe criteria with gusts to 67 mph. Thunderstorms over the Sierra and the Kern desert redeveloped the next day, and spread into the Tehachapi Mountains. Around an inch of rain fell in the Frazier Park-Pine Mountain Club area, but no flooding was reported.

The marine layer deepened along the coast on July 19<sup>th</sup>, and pushed through the Sacramento River Delta into the San Joaquin Valley overnight and continued the next couple of days. This layer of marine air was only about 1500 feet deep, but was enough to lower temperatures a few degrees, especially over the northern part of the San Joaquin Valley. The high temperature at Merced Municipal Airport on the 19<sup>th</sup> was 109 degrees; two days later, the high topped out at only 99 degrees.

An upper-level low moved into the Pacific Northwest, weakening the ridge and allowing the marine layer to continue to deepen. Marine air continued to spill into the San Joaquin Valley, dropping temperatures back to near normal. Bakersfield only had a high of 98 on July 22<sup>nd</sup>, ending its string of 100+ degree days at eight. Two days later, Fresno's high topped out at 99 degrees, ending its streak of 100+ days at 10.

Thunderstorm activity continued along the Southern Sierra Nevada crest through the 23<sup>rd</sup>, then stayed east of the crest as the flow aloft over California became more westerly. The flow became more southerly by July 26<sup>th</sup> as the upper-level ridge built back into California. In addition to bringing a return of triple-digit heat to the San Joaquin Valley, subtropical moisture moved into the Southern Sierra Nevada. This resulted in thunderstorms again forming near and along the Sierra crest. Strong thunderstorms developed on July 28<sup>th</sup> and 29<sup>th</sup>, with one storm near Agnew Pass on the 28<sup>th</sup> prompting a Severe Thunderstorm Warning. A few of the other storms, while not severe, were strong enough to warrant Significant Weather Advisories.

An upper-level low that formed in the eastern Pacific—west of the northern California coast—set up an onshore flow through the Golden Gate and Sacramento Delta. This funneled marine air into the San Joaquin Valley, bringing a modest cooling trend to the lower elevations of interior central California. Although high temperatures across most of the San Joaquin Valley fell below 100 for the last two days of the month, temperatures fell only to near normal for the end of July. Above the marine air layer, temperatures continued unseasonably warm. Yosemite Valley had a high of 99 on July 31<sup>st</sup>, one degree warmer than Fresno.